

REMARKS

Initially, Applicants would like to thank Examiner Pickard for granting an interview and for her time spent during the interview.

The application is believed to be in condition for allowance for the reasons set forth at the interview and expanded upon below.

Claims 51-74 and 76-78 are pending in the application.

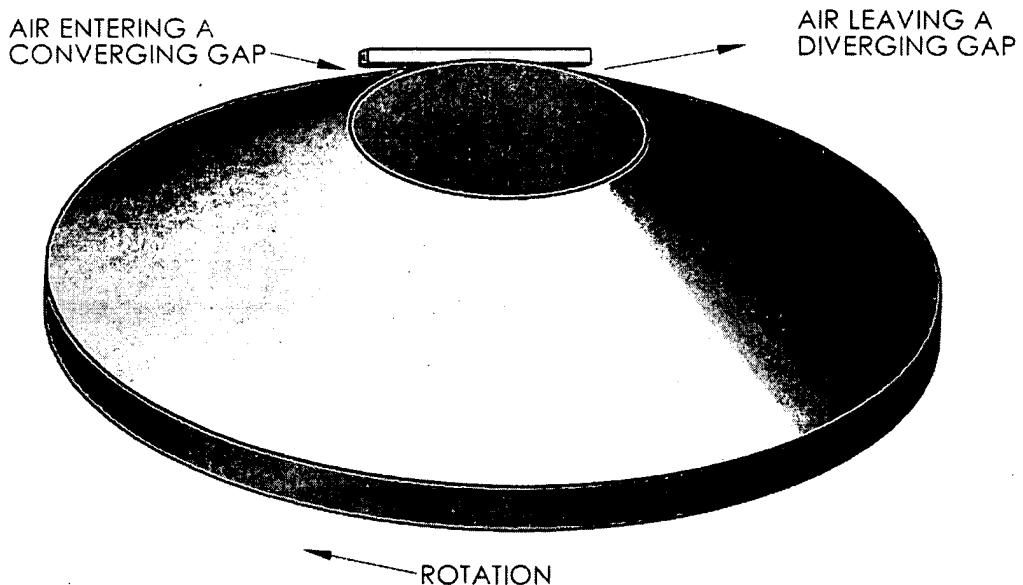
Claims 51-74 and 76-78 were rejected under 35 USC 112, first paragraph as allegedly failing to comply with the written description requirement. That rejection is respectfully traversed.

As pointed out at the interview, the specification provides support for the recited "a diverging gap extending between the surfaces on one side of a plane which contains the point or line of closest engagement and with a converging gap extending between the surfaces on another side of said plane".

With respect to Figure 1 of the present application and page 11, lines 8-12 of the application as filed, the recited line (of closest engagement) is indicated, for example, as lying in the same radial plane as axis 6. Figure 3 shows a gap on one side of this line, it being understood that a gap also exists on the other side of the line based on the recited frustoconical surface or the conical surface 3 of Figure 3. This is clear from the drawing, reproduced below for explanatory purposes only,

showing the converging/diverging gaps between the recited frustoconical surface (e.g. 3 of Figure 3) and the flat surface of, for example, tile 2.

EXPLANATORY DRAWING



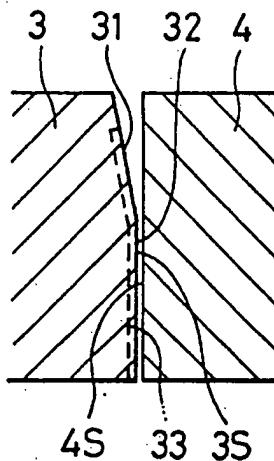
In view of the above and as agreed at the interview, the claimed subject matter is sufficiently described in the specification so that the 35 USC 112, first paragraph should be withdrawn. Reconsideration and withdrawal of the same are respectfully requested.

Claims 51-58, 60, 61, 63-72, 75 and 76-78 were rejected under 35 USC §103(a) as being unpatentable over KIMURA 5,224,714 in view of SHAPIRO 5,399,024. That rejection is respectfully traversed.

Claim 51 recites in part, at least one flat surface disposed immediately adjacent a frustoconical surface so that the two surfaces face each other and define a point or a line of closest engagement between the surfaces.

As pointed out during the interview, the tapered surface 31 of sealing ring 3 of KIMURA never engages the flat surface 4S of sealing ring 4. Rather, the flat surface 3S of sealing ring 3 defines a surface of closest engagement with flat surface 4S as best seen in Figure 7(a), reproduced below.

FIG. 7(a)



Thus, even if one of ordinary skill in the art were to replace seal ring 4 with a plural pivotally mounted tiles as taught by SHAPIRO, the invention of claim 51 would not result as there would be no point or line of closest engagement between a frustoconical surface and a flat surface.

Moreover, contrary to the position set forth at the interview, the references do not suggest placing a tile

against the tapered surface of KIMURA. That is, as set forth above, KIMURA only suggests flat surface to flat surface engagement. SHAPIRO also only suggest flat surface to flat surface engagement.

Further, as pointed out at the interview, KIMURA requires a tapered surface (or recessed surface) to form an entry for high pressure fluid to move the seals (3, 4) out of contact (see column 4, lines 38-43) and it would not have been obvious to cover this entry with a tile as suggested at the interview because this would change the principle of operation of KIMURA. The suggested modification also is opposed to the principles on which SHAPIRO is based. That is, SHAPIRO teaches a single wedge-shaped seal as seen in Figure 5.

Thus, it would not have been obvious to modify the references to include a diverging gap extending between the surfaces on one side of a plane which contains the point or line of closest engagement and a converging gap extending between the surfaces on another side of the plane as required by claim 51.

Independent claims 76 and 77 include similar features and the analysis above regarding claim 51 also applies to claims 76 and 77.

The dependent claims are believed patentable at least for depending from an allowable independent claim.

Claims 59, 62, 73 and 74 were rejected under 35 USC 103(a) as being unpatentable over KIMURA in view of SHAPIRO and

further in view of GARDNER 3,499,653. That rejection is respectfully traversed.

GARDNER is only cited with respect to features of the dependent claims. GARDNER does not overcome the shortcomings of KIMURA and SHAPIRO set forth above with respect to claim 51. That is, GARDNER similar to KIMURA teaches a wedge shape to initiate and maintain separation of surfaces 12, 14. Moreover, the convex portion of GARDNER is only at the radial outer region (see column 2, lines 38-42), and further, GARDNER does not suggest a flat surface contacting the convex portion. Since claims 59, 62, 73 and 74 depend from claim 51 and further define the invention, these claims are believed to be patentable at least for depending from an allowable independent claim.

Claims 51-58, 60, 61, 63-65, 67-69 and 76-78 were rejected under 35 USC §103(a) as being unpatentable over SINGLETON 3,529,838 in view of SHAPIRO. That rejection is respectfully traversed.

As pointed out at the interview, SINGLETON discloses a tapered surface 22. SINGLETON does not disclose that surface 22 is frustoconical as recited. Indeed, each seal surface in SINGLETON is flat (see column 4, lines 26-27). Moreover, surface 22 does not engage flat surface 18. Rather, as seen in Figure 1, seal 54 contacts surface 18 as part of a known tapered-face seal configuration (see column 3, lines 65-72). Thus, even if one of ordinary skill in the art were to replace surface 18 with a

plurality of tiles as taught by SHAPIRO, the invention of claim 51 would not result.

Moreover, it does not appear that SINGELTON could be modified in the manner suggested.

SINGLETON teaches a single runner 16 that works in conjunction with seal ring 20 to balance diameter 2B with diameter 2I across the entirety of runner 16 (see Figure 1 and column 4, line 67 to column 5, line 9). It is not apparent how SINGLETON might be configured in view of SHAPIRO and still maintain the required balance of SINGLETON. That is, it appears that the pivoting tiles of SHAPIRO would tilt and change the gaps 50, 51 of SINGLETON so that the required balance could not be maintained.

In view of this, the proposed combination appears improper in the first instance and, in any event would not result in the invention of claim 51.

Independent claims 76 and 77 include similar features to that of claim 51 and the analysis above regarding claim 51 also applies to claims 76 and 77.

In addition, claim 76 recites that the pivot is a spherical pivot. A spherical pivot is not disclosed or suggested by the proposed combination of references.

Although SHAPIRO pivots about point 80, nevertheless, such pivoting is not based on a spherical pivot. Rather, SHAPIRO

discloses elastomeric laminates 48 that expand or contract as the pad 60 moves to produce a pivoting action.

Similarly, claim 77 recites that each tile element is pivotally mounted about a spherical pivot on the carrier. The pivoting action of the elastomeric laminates of SHAPIRO does not meet this feature.

In view of the foregoing remarks, it is believed that the present application is in condition for allowance, and reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON

/Liam McDowell/

Liam McDowell, Reg. No. 44,231
209 Madison Street, Suite 500
Alexandria, VA 22314
Telephone (703) 521-2297
Telefax (703) 685-0573

LM/jr